

## 5th Grade Core Career Connection

**Title:** What Can We Do? And How Efficiently Can We Do It?

**Core Subject:** Social Studies, Math, Healthy Lifestyles

**Standards:** Social Studies 6050-02 The students will analyze how the historical past of the Western Hemisphere influences the present. Social Studies 6050-04 The students will explain how history is effected by patterns of buying and selling which relate to economic choices and ultimately to available resources. Math 5050-08 The students will analyze, generalize, and represent functional relationships and patterns. Healthy Lifestyles 7050-03 The students will understand and respect self and others related to human development and relationships.

**Objective:** Social Studies 6050-0201 Outline the major historical events, people, wars, and documents that played a significant role in United States history from 1492 to the present. (Beginning of the assembly line by Henry Ford) Social Studies 6050-0403 Explain how changes in the cost or availability of resources can change the supply and marketprice of a product. Social Studies 6050-0405 Demonstrate how competition, increased productivity, and technology among producers tends to increase the quality of products and lowers the price to consumers. Math 5050-0803 Analyze functional relationships to explain how a change in one quantity results in a change in another. Healthy Lifestyles 7050-03 List ways of showing respect and care for others.

### **Abstract / Strategy:**

Students will explore the changes made in U.S. economics by the creation of Henry Ford's assembly line. Students will also analyze mathematical changes made by changing amounts of parts able to be processed in a certain amount of time. In order to provide service to others, the students will then generate ideas for simple items which they could provide for the community, be it school, local, state, national, or world. The students will then meet with someone who works on or with an assembly line and learn the advantages and disadvantages of such a system and ways in which they can manufacture/package their chosen item. They will then carry through with the service project using an idea generated by one of the cooperative learning groups in the classroom.

**Occupational Connection:** Assembly line worker / technician

### **Recommended Materials/Resources:**

Possible books:

Henry Ford, Maker of the Model T by Miriam Gilbert

Henry Ford, Boy with Ideas by Hazel Aird

Henry Ford, Engineer by Louise Neyhart

The Factories by Leonard Fisher

In the Factory by Malcolm Dixon

Let's Discover the World of Machines by Raintree Publishers

Assembly line worksheet

Materials needed for item to be manufactured/packaged.

**Time Allotted:**

- 1/2 hour for information about Henry Ford.
- 3/4 hour for math worksheet
- 1/4 hour for brainstorming
- 1 hour for visit with assembly line worker / technician
- The rest depends on item to be made/packaged on assembly line.

**Teacher Role:**

1. Share information about Henry Ford with students.
2. Copy math sheet for students to complete.
3. Help class develop ideas for needed community items.
4. Finalize plans for visit by assembly line technician. Arrange to visit with the guest ahead of time (either by phone or in person) to inform them of concepts which have been taught.
5. Obtain necessary materials for service project.
6. Supervise service project implementation.

**Activity:**

1. Groups will become familiar with Henry Ford and what his development of the assembly line meant to the economy of the United States.
2. Students will complete math sheet to show how items can be produced more quickly on an assembly line.
3. With the assistance of the teacher, the students will decide on an inexpensive item needed by the community, be it school, local, state, national, or global. The class will brainstorm ways items can be made and/or packaged.
4. Class will visit with an assembly line worker / technician. In conjunction with the assembly line worker, the class will work in cooperative groups to explore ways in which the item to be manufactured and/or packaged can be made more quickly.
5. Groups will share their ideas with the rest of the class.
6. The class will choose one group's method.
7. Implement the plan!

**Work-Based Learning, Community Connection:**

Contact Work-Based Learning Coordinator to invite assembly line worker to share his/her responsibilities, ways to increase effectiveness of assembly lines, and other career information.

**Community Partner Role:**

1. Use grade appropriate language and concepts.
2. Reinforce increased production through assembly line.
3. Reinforce necessity of each worker on the assembly line.
4. Serve as a resource as groups develop ways in which the product can be made more quickly and/or effectively.
5. Provide career expertise.

**Suggested Assessment:**

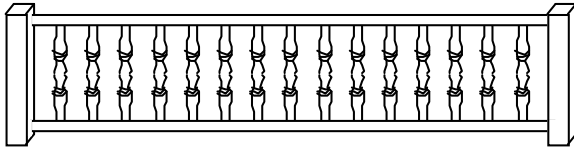
Participation in decision-making.

Completion of worksheet.

Active participation in cooperative group development of an effective assembly line.

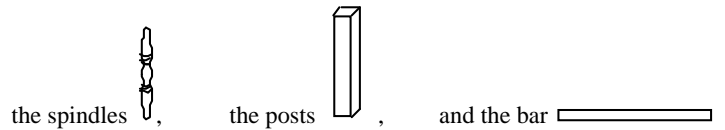
Completion of activity.

Name \_\_\_\_\_  
 Assembly Line Functions



Welcome to Benny's Bannisters, a factory where bannisters and railings are manufactured. Benny is, as usual, trying to improve business. Let's see if we can help!

Benny's railings consist of 3 components (parts). They are :



Benny works alone.

He shapes 15 spindles for a railing like the one above. The spindles take him 10 minutes to make. **S** stands for the time it takes to make one spindle , how long does it take him to make all the spindles for a railing like the one above?

$$15 \times \mathbf{S} = \underline{\hspace{2cm}}$$

He shapes and mortises two posts for each railing. Each post takes 30 minutes to make. **P** stands for the time it takes to make one post, how long does it take him to make both posts for a railing like the one above?

$$2 \times \mathbf{P} = \underline{\hspace{2cm}}$$

Benny measures, drills and sands two bars for each railing. Each bar takes 60 minutes to make. **B** stands for the times it takes to make one bar, how long does it take him to make both bars for a railing like the one above?

$$2 \times \mathbf{B} = \underline{\hspace{2cm}}$$

The time it takes Benny to make one whole railing would be figured with the following equation.

$$(15 \times \mathbf{S}) + (2 \times \mathbf{P}) + (2 \times \mathbf{B}) = \underline{\hspace{2cm}}$$

$$(15 \times 10) + (2 \times 30) + (2 \times 60) = \underline{\hspace{2cm}}$$

$$150 + 60 + 120 = \underline{\hspace{2cm}}$$

Let's help Benny figure out a faster way!

(Turn the worksheet over!)

Write down an idea for speeding up the making of the spindles. \_\_\_\_\_

How long do you think it would take to make each one? \_\_\_\_\_



How does that change our original equation?

$$(15 \times \mathbf{S}) + (2 \times 30) + (2 \times 60) = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} + 60 + 120 = \underline{\hspace{2cm}}$$

Write down an idea for speeding up the making of the posts. \_\_\_\_\_

How long do you think it would take to make each one? \_\_\_\_\_

How does that change our original equation?

$$(15 \times 10) + (2 \times \mathbf{P}) + (2 \times 60) = \underline{\hspace{2cm}}$$

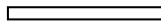
$$150 + \underline{\hspace{2cm}} + 120 = \underline{\hspace{2cm}}$$



Write down an idea for speeding up the making of the bars. \_\_\_\_\_

How long do you think it would take to make each one? \_\_\_\_\_

How does that change our original equation?



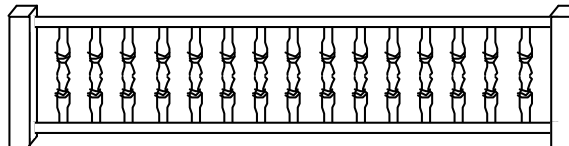
$$(15 \times 10) + (2 \times 30) + (2 \times \mathbf{B}) = \underline{\hspace{2cm}}$$

$$150 + 60 + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

**How about if Benny used ALL your ideas?**

$$(15 \times \mathbf{S}) + (2 \times \mathbf{P}) + (2 \times \mathbf{B}) = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$



What do you think that would do for Benny's business?

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